WHAT IS CLAIMED IS:

1.   **(Currently Amended)** A method for the digital control of register in a multicolor printing machine (1) by controlling the production of lines of image points (33) of an element of a the printing machine (1), according to Claim 8, with an assignment (6, 6'), based on measuring the positions of elements (12, 12', 12'', 12'''; 13, 13', 13'', 13'''; and 18) that carry images and substrates of two non-coincident digital variables (2 and 2'), comprising the steps of:

for successive assignments (6, 6'), an integer assignment (6, 6') of small steps (3) of a first variable (2) to a large step (3') of a second variable (2') is carried out such that for each assignment (6, 6') the numerical ratio remains constant or is changed in such that the assignment error (4, 4') never reaches the width (5) of the smaller steps (3) of the first variable (2) in any assignment (6, 6'), nor exceeds half the width (5) of the digital steps (3) of the smaller variable (2) in any assignment (6, 6'); and during each assignment (6, 6') of the smaller steps (3) of the first variable (2) to the larger steps (3') of the second variable (2'), the remaining, non-integer residual (4, 4') is set and, during the calculation of the assignment of the steps (3) of the smaller variable (2) to the next step (3') of the larger variable (2'), the control system (8, 8', 8'', 8''') adds this residual (4, 4').

2.   **(Cancelled)**

3.   **(Cancelled)**

4.   **(Currently Amended)** The method as claimed in Claim 1, wherein it is used to assign (6, 6') lines of image points (33) produced on the image cylinders (12, 12', 12'', 12''') to fixed angular sequences (16) of the image cylinders (12, 12', 12'', 12''').

5.　　**(Currently Amended)** The method as claimed in Claim 4, wherein, in order to achieve coincidence of register between the color separations (7, 7', . . .) produced by the color printing units (17, 17', 17'', 17'''), said color separations are subdivided into areas (10', 10'', . . ., 10^n) which are assigned to one another, the areas (10', 10'', . . ., 10^n) consisting of a fixed number of lines of image points (33).

6.　　**(Cancelled)**

7.　　**(Currently Amended)** The method as claimed in Claim 4, wherein the assignment of the areas (10', 10', . . ., 10^n) of the color separations (7, 7', . . .) to one another, and the assignment (6, 6') of the lines of image points (33) to the angular sequences (16) is based on the acquisition and evaluation of the data (23) from register marks (19, 19', 19'', 19''') printed by the color printing units (6, 6', 6'', 6''').

8.　　**(Currently Amended)** Apparatus for digital control of register in a multicolor printing machine (1) by controlling the production of lines of image points (33) of an element of a printing machine with a control system (8, 8', 8'', 8'''), wherein the control system (8, 8', 8'', 8''') comprises: a selecting device for a successive assignment (6, 6') of two non-coincident digital variables (2 and 2'), said selecting device performs an integer assignment (6, 6') of the small steps (3) of the first variable (2) to a large step (3') of the second variable (2') such that the numerical ratio remains constant or is changed such that the assignment error (4, 4') never reaches the width (5) of the smaller steps (3) of the first variable (2) in any assignment (6, 6'); and a memory (20, 20', 20'', 20''') in which, during each assignment (6, 6') of the smaller steps (3) of the first variable (2) to the larger steps (3') of the second variable (2'), the remaining, non-integer residual (4, 4') is set and, during the calculation of the assignment of the steps (3) of the smaller variable (2) to the next step (3') of the larger variable (2'), the control system (8, 8', 8'', 8''') adds this residual (4, 4').

9.   (Cancelled)

10.   (Currently Amended) The apparatus as claimed in Claim 8, wherein the control system (8, 8', 8'', 8''') is such that, for an assignment (6') of the steps (3, 3'), it forms the sum of the magnitude (34) to be assigned and the assignment error (4') of the previous assignment (6') of steps (3 and 3'), and rounds up if the magnitude exceeds half a smaller step (3) and rounds down if the magnitude falls below half a smaller step (3).

11.   (Currently Amended) The apparatus as claimed in Claim 10, wherein the control system (8, 8', 8'', 8''') is used to control the register of a multicolor printing machine (1), by controlling image production equipment (14, 14', 14'', 14''') assigned to image cylinders (12, 12', 12'', 12''') for the production of lines of image points (33) on the image cylinders (12, 12', 12'', 12''').

12.   (Currently Amended) The apparatus as claimed in Claim 11, wherein the control system (8, 8', 8'', 8''') is set up to assign the lines of image points (33) to fixed angular sequences (16) of the image cylinders (12, 12', 12'', 12''').

13.	(Currently Amended) The apparatus as claimed in Claim 12, wherein the system (8, 8', 8'', 8''') is set up in order to achieve coincidence of register between the color separations (7, 7', . . .) produced by color printing units (17, 17', 17'', 17'''), to subdivide said color separations into areas (10', 10'', . . ., 10^n) and assign these areas (10', 10'', . . ., 10^n) to one another, the areas (10, 10'', . . ., 10^n) having a fixed number of lines of image points (33).

14.	(Currently Amended) The apparatus as claimed in Claim 12, wherein sensors (21) are provided for measuring the position of elements (12, 12', 12'', 12'''~~;~~; 13, 13', 13'', 13'''; and 18) that carry images and substrates, and the control system (8, 8', 8'', 8''') is set up to perform the assignment (6, 6') on the basis of position measurement determined by the sensors (21).

15.	(Currently Amended) The apparatus as claimed in Claim 14, wherein the control system (8, 8', 8'', 8''') is set up to initiate the printing of register marks (19, 19', 19'', 19'''), wherein a sensor (22) is provided to detect the register marks (19, 19', 19'', 19'''), and wherein the control system (8, 8', 8'', 8''') is set up to evaluate the data (23) from the register marks (19, 19', 19'', 19''') such that the assignment of the areas (10', 10'', . . ., 10^n) of the color separations (7, 7', . . .) to one another is carried out to achieve coincidence of register, and the assignment (6, 6') of the lines of image points (33) to angular sequences (16) is carried out to reduce the error.

16.	(Cancelled)